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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,626	01/16/2004	Jacob H. Gunther	51764/12	1233

7590 10/07/2004

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EXAMINER

HAROLD, JEFFEREY F

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/759,626	GUNTHER, JACOB H.	
	Examiner	Art Unit	
	Jefferey F Harold	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7,9,11-13,17,18 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 3,8,10,14-16,19 and 23-25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the Information Disclosure Statement submitted on May 18, 2004 have been considered by the examiner (see attached PTO-1449).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, 4-7, 9, 11-13, 17, 18, 20, 21 and 22** are rejected under 35 U.S.C. 102(b) as being anticipated by Deville (United States Patent 5,909,646).

Regarding **claim 1**, Deville discloses a system for estimating signals received in the form of mixed signals. In addition Deville discloses an echo canceller for reducing echoes resulting from a far-end signal, the echo canceller comprising: a recursive least squares lattice structure to receive and whiten the far-end signal, and a ladder structure to receive time delays of the far-end signal and to receive and decorrelate a microphone signal with the time delays to provide an echo canceled signal, as disclosed at column 1, lines 17-21; column 3, line 1 through column 4, line 2; column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 2**, Deville discloses everything claimed as applied above (see claim 1), in addition Deville discloses wherein the recursive least squares lattice

structure includes a QR decomposition based least-squares structure, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 4**, Deville discloses everything claimed as applied above (see claim 1), in addition Deville discloses wherein the ladder structure is further to calculate a joint process estimation error, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 5**, Deville discloses a method for reducing echoes resulting from a far-end signal, the method comprising: receiving a microphone signal including a near-end signal and echoes; whitening the far-end signal to provide whitened time delays; and decorrelating a microphone signal based on the whitened time delays of the far-end signal to provide an echo canceled signal, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 6**, Deville discloses everything claimed as applied above (see claim 5), in addition Deville discloses wherein whitening the far-end signal is performed by a recursive least-squares lattice structure, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 7**, Deville discloses everything claimed as applied above (see claim 6), in addition Deville discloses wherein the recursive least squares lattice structure includes a QR decomposition based east-squares structure, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 9**, Deville discloses everything claimed as applied above (see claim 5), in addition Deville discloses wherein decorrelating the microphone signal is

performed by a ladder structure, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 11**, Deville discloses everything claimed as applied above (see claim 5), in addition Deville discloses wherein whitening the far-end signal and decorrelating the microphone signal is performed by a recursive least-squares systolic array, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 12**, Deville discloses everything claimed as applied above (see claim 5), in addition Deville discloses selecting a time window and wherein decorrelating the microphone signal is performed over the time window, as disclosed at column 5, lines 5-45.

Regarding **claim 13**, Deville discloses everything claimed as applied above (see claim 12), in addition Deville discloses equally weighting data representing the microphone signal and received during the time window, as disclosed at column 5, lines 5-45.

Regarding **claim 17**, Deville discloses a method for reducing echoes resulting from a far-end signal, the method comprising: receiving a microphone signal including a near-end signal and echoes; a recursive least squares lattice structure whitening the far-end signal to provide time delays, and a ladder structure receiving the time delays and decorrelating a microphone signal based on the time delays to provide an echo canceled signal, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 18**, Deville discloses everything claimed as applied above (see claim 17), in addition Deville discloses wherein the recursive least squares lattice structure includes a QR decomposition based least-squares structure, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 20**, Deville discloses everything claimed as applied above (see claim 17), in addition Deville discloses wherein decorrelating the microphone signal further includes the ladder structure performing a joint process estimation error, as disclosed at column 8, line 1 through column 9, line 33 and exhibited in figures 1, 4 and 5.

Regarding **claim 21**, Deville discloses everything claimed as applied above (see claim 17), in addition Deville discloses selecting a time window and wherein decorrelating the microphone signal is performed over the time window, as disclosed at column 5, lines 5-45.

Regarding **claim 22**, Deville discloses everything claimed as applied above (see claim 21), in addition Deville discloses equally weighting data representing the microphone signal and received during the time window, as disclosed at column 5, lines 5-45.

Allowable Subject Matter

3. ***Claims 3, 8, 10, 14-16, 19, and 23-25*** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Citation of Pertinent Art

4. The prior art of record and not relied upon is considered pertinent to applicant's disclosure:

Torkkola (U.S. Patent 5,675,659) discloses methods and apparatus for blind separation of delayed and filtered sources;

Ngo et al. (U.S. Patent 5,694,474) discloses an adaptive filter for signal processing and method;

Deville (U.S. Patent 5,999,956) discloses separation system for non-stationary sources;

Lindgren et al. (U.S. Patent 6,577,675) discloses signal separation.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F Harold whose telephone number is 703-306-5836. The examiner can normally be reached on Monday - Friday 9 am - 5:30 pm.

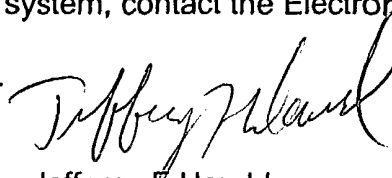
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JFH
September 30, 2004



Jefferey F Harold
Examiner
Art Unit 2644